CLAIMS

1. A method for the identification of hetero-associating (poly)peptides comprising the steps of:

   (a) providing a library A of (poly)peptides/proteins comprising (poly)peptides A_m having the general formula:

   VAQLXEXVKTLXAXZYELXSXVQRLXEXVAQL

   wherein X represents a mixture of E, K, Q, and R, and wherein Z represents a mixture of N and V

   (b) providing a library B of (poly)peptides/proteins comprising (poly)peptides B_n having the general formula:

   VDELXAXVDQLXDXZYALXTXVAQLXKXVEKL

   wherein X represents a mixture of E, K, Q, and R, and wherein Z represents a mixture of N and V;

   (c) combining in a common medium the (poly)peptides/proteins of said libraries A and B; and

   (d) screening or selecting for a screenable or selectable property caused by the hetero-association of a (poly)peptide A_m with a (poly)peptide B_n.

2. The method of claim 1 wherein said libraries A and B are provided by providing libraries of nucleic acid sequences encoding said (poly)peptides/proteins followed by causing or allowing the expression of said libraries of (poly)peptides/proteins.

3. The method of claim 2 wherein said common medium are host cells, each cell harbouring nucleic acid sequences encoding a (poly)peptide/protein of each of said libraries A and B.

4. The method of claim 3 wherein said (poly)peptides/proteins of said libraries A and B further comprise either a N- or a C-terminal fragment of the murine DHFR enzyme, and wherein said screenable or selectable property is insensitivity of the host cell to trimethoprim by reconstitution of the DHFR enzyme on hetero-association of (poly)peptides A_m and B_n.

5. A hetero-associating (poly)peptide A_m taken from the list of:

(a) WinZipA1: VAQLEEKVKTLRAQNYELKSRVQRLREQVAQL
(b) WinZipA2: VAQLRERVKTLRAQNYELESEVQRLREQVAQL
(c) WinZipA3: VAQLQEKVKTLRARNYELKSEVQRLEEKVAQL
(d) WinZipA4: VAQLEEQVKTLQARNYELKSKVQRLKEKVAQL
(e) WinZipA5: VAQLEERVKTLRAQNYELKSKVQRLEEQVAQL
(f) WinZipA6: VAQLEEQVKTLEAENYELKSKVQRLRERVAQL
(g) WinZipA7: VAQLQEQVKTLEAQNYELESEVQRLKEQVAQL
(h) WinZipA8: VAQLEERVKTLKAENYELESEVQRLKERVAQL
(i) WinZipA9: VAQLEEKVKTLKAKNYELKSKVQRLKEKVAQL
(j) WinZipA10: VAQLQEEVKTLQAENYELRSEVQRLEEEVAQL
(k) WinZipA11: VAQLRERVKTLRAENYELQSKVQRLKERVAQL

6. A hetero-associating (poly)peptide B_n taken from the list of:

(a) WinZipB1: VDELQAEVDQLQDENYALKTKVAQLRKKVEKL
(b) WinZipB2: VDELKAEVDQLQDQNYALRTKVAQLRKEVEKL
(c) WinZipB3: VDELEAEVDQLKDQNYALKTKVAQLQKQVEKL
(d) WinZipB4: VDELRAKVDQLQDENYALETEVAQLQKRVEKL
(e) WinZipB5: VDELEAEVDQLEDQNYALQTRVAQLEKRVEKL
(f) WinZipB6: VDELKAKVDQLKDKNYALRTKVAQLRKKVEKL

(g) WinZipB7: VDELRAQVDQLQDKNYALRTRVAQLKKRVEKL

(h) WinZipB8: VDELQAEVDQLQDQNYALRTQVAQLKKKVEKL

(i) WinZipB9: VDELRAQVDQLEDQNYALETQVAQLEKEVEKL

(j) WinZipB10: VDELQAKVDQLKDENYALQTKVAQLQKRVEKL

(k) WinZipB11: VDELFAEVDQLEDENYALRTRVAQLRKQVEKL

7. A method for the identification of optimized hetero-associating (poly)peptides by using a hetero-associating (poly)peptide of claims 5 or 6 in a method according to anyone of claims 1 to 4, wherein a hetero-associating peptide WinZipA_m of claim 5 is used instead of library A of (poly)peptides/proteins comprising (poly)peptides A_m in step (a) of claim 1, or wherein a hetero-associating peptide WinZipB_n of claim 6 is used instead of library B of (poly)peptides/proteins comprising (poly)peptides B_n in step (b) of claim 1.

8. An optimized hetero-associating (poly)peptide obtainable by the method of claim 7.

9. A pair of hetero-associating (poly)peptides taken from the list of:

(a) WinZipA1 and WinZipB1

(b) WinZipA2 and WinZipB1

(c) WinZipA1 and WinZip B2

(d) WinZipA3 and WinZip B3

(e) WinZipA4 and WinZip B4

(f) WinZipA5 and WinZip B5

(g) WinZipA6 and WinZip B6

(h) WinZipA7 and WinZip B7

(i) WinZipA8 and WinZip B8

(j) WinZipA9 and WinZip B9

(k) WinZipA10 and WinZip B10

(l) WinZipA11 and WinZip B11

10. A (poly)peptide/protein comprising one of the hetero-associating (poly)peptides of claims 5 or 6, or an optimized hetero-associating (poly)peptide of claim 8, and a further (poly)peptide/protein.

11. A (poly)peptide/protein of claim 10 wherein said further (poly)peptide/protein is an enzyme, a toxin, a cytokine, a metal binding domain, a transcription factor, a member of the immunoglobulin superfamily, a bioactive peptide of 5 to 15 amino acid residues, a peptide hormone, a growth factor, a lectin, a lipoprotein, a peptide which is able to bind to an independent binding entity, or a functional fragment of any said further (poly)peptide/protein.

12. A hetero-associated (poly)peptide/protein comprising at least two (poly)peptide/proteins of claims 10 or 11, associated by hetero-association of a hetero-associating (poly)peptide A_m and a hetero-associating (poly)peptide B_n.

13. A DNA sequence encoding a hetero-associating (poly)peptide of claims 5 or 6, an optimized hetero-associating (poly)peptide of claim 8, or a (poly)peptide/protein of claims 10 or 11.

14. A DNA sequence encoding a hetero-associating (poly)peptide wherein said DNA sequence hybridizes under stringent conditions to a DNA sequence encoding a hetero-associating (poly)peptide of claims 5 or 6.

15. A vector comprising a DNA sequence of claim 13 of 14.

16. A vector comprising DNA sequences encoding at least two (poly)peptide/proteins of claims 10 or 11, comprising at least a hetero-associating (poly)peptide A_m and a hetero-associating (poly)peptide B_n.

17. A host cell containing at least one vector of claims 15 or 16.

18. A host cell of claim 17 which is a mammalian, preferably human cell, a yeast cell, an insect cell, a plant cell, or a bacterial, preferably E.coli cell.

19. A method for the production of a hetero-associating (poly)peptide of claims 5 or 6, an optimized hetero-associating (poly)peptide of claim 8, a (poly)peptide/protein of claims 9 or 10, or a hetero-associated (poly)peptide/protein of claim 12, which comprises culturing the host cell of claims 17 or 18 in a suitable medium, and recovering said (poly)peptide or said (poly)peptide/protein produced by said host cell.

20. A pharmaceutical composition comprising the hetero-associated (poly)peptide/protein of claim 12.

21. A diagnostic composition comprising the hetero-associated (poly)peptide/protein of claim 12.

22. A kit containing at least one of

(a) a hetero-associating (poly)peptide of claims 5 or 6, an optimized hetero-associating (poly)peptide of claim 8, or a (poly)peptide/protein of claims 10 or 11, or a hetero-associated (poly)peptide/protein of claim 12; or

(b) a vector of claims 16 or 17.